July 31,2003

Housatonic River Initiative

Comments on the Human Health Risk Assessment

GE Housatonic River Site

Rest of River

The Housatonic River Initiative is a 501 (C) (3) non-profit citizens group founded in 1992. HRI membership includes river advocates, sportsmen, scientists, contaminated property owners, and public officials. HRI was formed with the specific mission of cleaning the Housatonic River and surrounding sites of PCB's and other chemical contamination. In addition, our mission seeks to reverse the legacy of a neglected river, through education, public participation, and proactive advocacy. HRI has an eleven-year track record of communicating with Berkshire County residents, including those who are directly affected by the chemical contamination from the GE site. These include fill property owners, floodplain property owners, and residential property owners. The Massachusetts DEP has written and recognized HRI " as a primary citizens advisory group for these sites" suggesting that and other parties are encouraged to join forces under the HRI umbrella". HRI is the Technical Assisstance Grant recipient from the USEPA for this site.

This set of comments is intended to expand on the scientific comments presented by our technical consultant Dr. Peter de Fur. Our intention is to provide some history and understanding about this site. We will also discuss some of our concerns about the risk assessment process and why we endorse the "precautionary principle" as a means to help determine site remediation goals. In addition, we have attached our prior comments to the ATSDR and Massachusetts Department of Public Health on the health assessments conducted around the GE facility. We do so, to further bolster our assertion that the cleanup which has already occurred may not have gone far enough in protecting the public from future health risks associated with this site.

Pittsfield, Massachusetts is one of the largest PCB contaminated sites in the United States. For decades, the community around the General Electric Facility has maintained that negative health effects have been experienced due to exposure from these chemicals. **(See attached HRI comments to ATSDR-Pittsfield Health Assessments)**

A survey conducted by HRI and the John Snow Institute of Epidemiology has so far "red flagged" that skin rashes and thyroid disorders are higher than the national average around the GE facility. HRI has been working for years to help this neighborhood document their concerns and bring this information to the proper state and federal health agencies.

Comments

1) **Using related congeners to estimate risk**

On page ES-5 of the executive summary it states "RfDs for two commercial PCB mixtures, Aroclor 1016 and Aroclor 1254, have been published in the EPA Integrated Risk Information System (IRIS) consensus database. The environmental mixture of PCBs at the site most closely resembles the commercial mixture Aroclor 1260, with minor contributions from Aroclor 1254. With respect to chlorine content and environmental persistence, the PCB mixture at this site more closely resembles Aroclor 1254 than Aroclor 1016. Therefore, the RfD of 0.00002 mg/kg-d (2E-05) based on Aroclor 1254 was used in the assessment of noncancer health effects".

It is well known that Aroclor 1260 is one of the highest chlorinated PCBs. Using RfDs for 1254 because there is no data for Aroclor 1260 in the Integrated Risk Information System database may result in minimizing risks associated with the higher

chlorinated compound. At best it provides only a comparison to a closely related congener.

2) Lack of data for Connecticut

Although it has been documented that impoundments and slower moving sections of the river in Connecticut have higher levels of PCBs than the faster moving sections, there was no attempt to gather new samples or confirm historical data. Even though the PCB levels are much lower than in the Massachusetts portion of the river there has been a fish advisory for many years in Connecticut. HRI has long maintained that dam sites below Woods Pond, both in Massachusetts and Connecticut, should be considered for remediation. These levels of PCBs might inhibit the future goal of a fishable river.

Flooding has occurred in the Connecticut portion of the river. (1,2,3,) Considering the amount of mobile PCBs was considerably higher when there was active dumping into the river system, sampling of the floodplain areas would provide useful data. This new data would either confirm EPA's position that there is no impact to the floodplain in Connecticut or determine the need for further investigation.

Much of the data provided by the Connecticut DEP was generated by contractors for General Electric. We remind EPA that the Stewart Report by GE contractors in the 1980s grossly underestimated the volume of PCBs in the river **(see attachment (4) HRI comments to ATSDR).**

3) Fishing on the river

On page ES-8 the executive summary states that " there is no evidence of subsistence hunting and angling in Massachusetts at this time; investigation of tribal practices in Connecticut is still underway".

There has never been an adequate survey of fishing on the Housatonic River to determine how many people are fishing on the river and how many are eating their catch. HRI has noticed increased activity along the river in the last ten years. We have included a picture of ice fishing on Wood's Pond. Woods Pond is one of the most contaminated sections of the "rest of the river". The picture is a typical day at the pond during ice season. The pond is usually loaded with fisherman every day of the week. We have observed some of these anglers keeping their catch for consumption.

Ice Fishing at Woods Pond winter 2003

During the summer months Wood's Pond also has daily fishing around the dam, bridge abutments, and bass fisherman in their watercraft. We have also noted large numbers of people fishing at Rising Pond, smaller ponds in Lee, cold water stretches of

the river where trophy Brown Trout are being caught, and a huge number of anglers in the Connecticut sections of the river. Individuals have been observed catching carp with huge nets and transporting them off site.

Over the last ten years the demographics of both Berkshire County and communities surrounding the Connecticut portion of the river has changed dramatically. As many new community members arrive, a more diverse combination of nationalities are being documented. The Asian and Latin community has grown dramatically in Berkshire County and Connecticut in the last ten years. (see Berkshire County census data).

In Connecticut poor families have been documented catching fish to provide food for their families.(I.E. subsistence fishing.) (See (5)attached from article January 8, 1993 Hartford Courant). These immigrant populations have increased both in Connecticut and Berkshire County since 1993.

It is also well documented that PCBs have migrated with the fish into the tributaries of the Housatonic River. Many of tributaries are not posted with warning signs increasing the probability the angler may consume his or her catch.

The Schaghticoke Indian Tribe have told us of their cultural practice of wrapping carp with mud from the bottom of the river to create a sort of bake oven.

These increases in use of the river should be documented and may provide statistics that may indicate increased risk.

4) Waterfowl

The risk assessment states that "For the fish and waterfowl consumption scenarios, the risks from tPCBs alone, TEQ risk alone, or tPCBs and TEQ in combination exceed EPA's risk range. For both fish and waterfowl in Reaches 5 and 6,

cancer risks from TEQ are higher than from tPCB. At Rising Pond, tPCB and TEQ risks are comparable." There are no samples of waterfowl from the Connecticut portion of the river. The waterfowl all the way to Long Island Sound may be contaminated. This data would help to quantify actual risks and increase the likelihood that remediation management decisions might have to include "hotspot" Connecticut portions of the river.

5) Frogs and turtles

Historically there has been harvesting of frogs and to some lessor extent turtles in the Housatonic River. In the mid 1980's I personally observed a boat of men shooting frogs with a pellet gun and harvesting them into 5 gallon white buckets. When asked they responded they were selling them to restaurants. Berkshire County sportsmen have many recollections of harvesting frogs to eat.

It would be an easy task to document this activity to enhance the argument that frogs have been a legitimate pathway of exposure for Berkshire County residents.

6) Cumulative Risks…….Multiple exposures / Existing body burdens

Risk assessment by itself may not able to provide accurate risk calculations given the variety of exposure pathways and the pre-existing, elevated body burdens already measured in sample, local populations. The region's population has been exposed to a wide range of possible PCB sources: (1) air exposure from the more than two decade long operation of GE's PCB **incinerator directly across Newell Street, (2) volatilization from the GE facility, the** Housatonic River and contaminated soils from GE dumpsites off of Sackett Street, the Newell and Lyman Street Parking Areas, as well as the contaminated PCB fill soils. (Asof December, 2001, more than 160 homes in Pittsfield have fill soil removed.)

(3) direct contact with surface contaminated soils and sediments, as many residents received PCB-contaminated fill during GE's giveaway program; (4) airborne, particulate PCB-impregnated matter measured on the streets of Pittsfield near the facility and (5), for many, direct exposure in the workplace.

Scenarios that include ex- GE workers, individuals growing up on fill properties, or others who have been exposed to the more highly contaminated GE facility have not been included. At many neighborhood meetings in the highly contaminated neighborhoods individuals have identified themselves as sportsmen who hunt and fish in southern portions of the river. In fact the president of the Berkshire County League of Sportsmen lives near the GE facility. The "Berkshire County League of Sportsmen" has an active membership of 3000 individuals with 50-60% of this membership from the City of Pittsfield. These scenarios are present and may indeed present the greatest risk to individuals.

The Massachusetts Department of Public Health (MDPH) previously completed an exposure assessment study of the Housatonic River area (MDPH 1977). Residents of eight communities that live within one-half mile of the Housatonic River were randomly chosen to participate in the exposure assessment study. **(see (4) HRI comments to the ATSDR – 2002 - attachment)**

The MDPH Housatonic River Area PCB Exposure Assessment Study states: "Of the total 1529 participants enrolled in the household screening survey, 120 were selected and invited to participate in blood testing for PCBs. Children less than 18 years of age were not selected to participate because the three main predictors of serum PCB levels are age, occupational exposure, and consumption of contaminated fish and seafood.

Moreover, children were not likely to have significantly higher exposure than adults, hence not likely to have higher blood PCB levels. Therefore, MDPH did not believe that the risk of drawing blood from minors was justified." (Pp. 19-20)

Finally, 69 individuals of the 1529 participated in blood testing. "Total serum PCBs, which were classified as Aroclor 1260, ranged from non-detectable to 35.81 ppb, with a mean of 5.44 ppb and a median of 3.93 ppb." (Page 20)

The Public Health Assessment continues: "In addition, residents who were not chosen for the study but who were concerned about exposure to PCBs were offered the opportunity to volunteer to participate in a separate effort. **The exposure assessment study found that although the participants had serum PCB levels within the reported background range for non-occupationally exposed individuals (ATSDR 2000), those who engaged in high-risk activities (e.g., high frequency and duration of consumption of contaminated fish) had higher serum PCB levels.**"

In MDPH's Abstract for the study, they stated: **"The serum PCB levels found among participants of both studies were generally within typical background estimates for a non-occupationally exposed U.S. population. ATSDR reports that, for U.S. populations without occupational exposure, mean serum PCB levels were usually between 4 and 8 ppb, with 95% of the individuals having concentrations less than 20 ppb. Since the results of this study represented individuals with the highest risk of exposure, it is reasonable to assume that serum PCB levels of most non-occupationally exposed residents in the HRA communities are within the US background range, though individual differences may likely occur."**

HRI argued during the planning stages that this study was poorly designed and would not attract those with the most likely history or opportunity for exposure to PCBs.

We argued as well that the study should include serum testing of individuals from neighboring hill town communities in Berkshire County without opportunities for

exposure to PCBs to establish a more local and more valid background level. Our suggestions were ignored.

HRI has contested the use of what we regard as the outdated background range data for non-occupationally exposed individuals of 4 – 8 ppb. In several health forums, HRI has consulted with nationally-known PCB researchers, including Dr. James Cogliano of the USEPA, Dr.. Deborah Rice formerly with The EPA and Dr. David Carpenter of the School of Public Health at the State University of New York, Albany, all of whom have stated that a more accurate figure for a background range for non-occupationally exposed individuals is significantly lower. Dr. Carpenter recently reported that the latest ATSDR estimate for background levels lies between 0.9 – 1.5 ppb. And Dr. Rice and others have spoken about recent studies in both the United States and Europe that suggest possible adverse developmental effects occurring among individuals with serum levels in this background range.

79 people participated in the MDPH Volunteer Study with serum PCB levels ranging from non-detect to 114.8 ppb, with mean of 9.07 ppb. We believe that our skepticism about MDPH's planning was well founded. It is interesting to note that the self-selected community volunteers did a better job of identifying opportunities for exposure than the MDPH "systematic" sample.

If one considers background levels for non-occupationally exposed individuals to be 8 ppb, then the range is only marginally above background. But if background levels are closer to 1 or 2 ppb, then these people have PCB blood burdens 4 to 9 times higher than background.

The already existing blood level body burden of PCBs in this study came from a group of residents that lived within ½mile of the Housatonic River. Th e majority were not fish or waterfowl consumers. This level may already present an unacceptable risk to this population. When calculating risk for individuals living in the ½mile corridor of the Housatonic River, this documented body burden should be included in the risk analysis.

7) Volatilization

HRI has long maintained that the volatilization of PCBs has been a concern for long-term exposure in Pittsfield. The public was told that PCBs do not volatilize and they have no smell. Ex- GE workers would routinely comment about "the smell" as they remediated sites in Pittsfield. They commented on how it smells like the inside of the GE plant when they would heat up the PCBs to make them less viscous.

The State University of New York (Suny) **(See (4) HRI comments to the ATSDR)** and then the EPA tested the inside of homes in Pittsfield and reported PCB readings in many of the samples. Even though these levels were determined not to be "action levels" by the EPA, there was still exposure. One must ask the question: What exposure dose does a child growing up for 18 years in a bedroom with low level ambient PCBs, and then playing in the contaminated fill in his backyard, and then fishing and harvesting waterfowl receive over their lifetime? This is certainly a possible scenario in Berkshire County.

There is also emerging data on volatilization, suggesting that it may be more of a factor than previously thought. It is being measured and/or studied on the Great Lakes, as part of global transport to the arctic, as absorbed in tree bark, etc.
Even is volatilized PCBs are a minor risk compared to direct contact or fish consumption, they still increase the overall risk when combined with the other exposures, and should be taken into consideration.

8) Response level

What level of exposure actually triggers negative health outcomes? What level and length of exposure will lead to some of the more recently identified risks associated with PCB exposure; developmental effects, lowered IQs, endocrine disruption, fetal transport,

sexual and gender development and other trans-generational effects. (see 6-11)

The risk assessment does not contain any exposure scenarios for fetuses. Risk assessment also does not, nor cannot address the complex interactions associated with the timing of exposure and the amount of exposure necessary to have an effect Recent studies and investigation strongly suggests that exposure timing may be a very substantial part of health outcomes and risk. . In addition, it has been demonstrated that often a lesser dose has greater negative health impacts, invalidating the "greater the dose, the greater the harm' thesis around which risk assessment is constructed.

Risk assessment vs. Precautionary principle.

The precautionary principle has been widely adopted in Europe. Recently the San Francisco City Council embraced it for guidance on all future environmental decisions. HRI urges EPA to abandon its exclusive reliance on the methodology of risk assessment to define and predict the complete risks associated with exposure to toxic chemicals including the issues of exposure timing, dosage, interaction between chemicals, age group, sensitivity etc. etc. We believe that risk assessment alone cannot adequately protect communities from exposure to the toxic chemicals that inevitably remain in our neighborhoods after a risk assessment-based remediation has been completed.

An international group of scientists, government officials, lawyers, and labor and grass-roots environmental activists met January 23-25, 1998 at Wingspread in Racine, Wisconsin to define and discuss the precautionary principle. [1] After meeting for two days, the group issued the following consensus statement:

Wingspread Statement on the Precautionary Principle

"The release and use of toxic substances, the exploitation of resources, and physical alterations
of the environment have ha d substantial unintended consequences affecting human health and the environment. Some of these concerns are high rates of learning deficiencies, asthma, cancer, birth defects and species extinctions, along with global climate change,

stratospheric ozone depletion and worldwide contamination with toxic substances and nuclear materials.

"We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment --the larger system of which humans are but a part.

"We believe there is compelling evidence that damage to humans and the worldwide environment is of such magnitude and seriousness that new principles for conducting human activities are necessary.

"While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors.

"Therefore, it is necessary to implement the Precautionary Principle: **When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.**

"The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action." [End of statement.]

The principle of precautionary action has 4 parts:

1. People have a duty to take anticipatory action to prevent harm. (As one participant at the Wingspread meeting summarized the essence of the precautionary principle, "If you have a reasonable suspicion that something bad might be going to happen, you have an obligation to try to stop it.")

2. The burden of proof of harmlessness of a new technology, process, activity, or chemical lies with the proponents, not with the general public.

3. Before using a new technology, process, or chemical, or starting a new activity, people have an obligation to examine "a full range of alternatives" including the alternative of doing nothing.

4. Decisions applying the precautionary principle must be "open, informed, and democratic" and "must include affected parties."

[1] Wingspread participants (affiliations are noted for identification purposes only):
Nicholas Ashford, Massachusetts Institute of Technology;
Katherine Barrett, University of British Columbia;
Anita Bernstein, Chicago-Kent College of Law;
Robert Costanza, University of Maryland;
Pat Costner, Greenpeace;
Carl Cranor, University of California, Riverside;
Peter deFur, Virginia Commonwealth University;
Gordon Durnil, attorney;

Dr. Kenneth Geiser, Toxics Use Reduction Institute, University of Mass., Lowell;
Dr. Andrew Jordan, Centre for Social and Economic Research on the Global Environment, University Of East Anglia, Britain;
Andrew King, United Steelworkers of America, Canadian Office, Toronto, Canada;
Frederick Kirschenmann, farmer;
Stephen Lester, Center for Health, Environment and Justice;
Sue Maret, Union Institute; Dr. Michael M'Gonigle, University of Victoria, British Columbia, Canada;
Peter Montague, Environmental Research Foundation;
John Peterson Myers, W. Alton Jones Foundation;
Mary O'Brien, environmental consultant;
David Ozonoff, Boston University;
Carolyn Raffensperger, Science and EnvironmentalHealth Network;
Pamela Resor, Massachusetts House of Representatives;
Florence Robinson, Louisiana Environmental Network;
Ted Schettler, Physicians for Social Responsibility;
Ted Smith, Silicon Valley Toxics Coalition;
Klaus-Richard Sperling, Alfred-Wegener Institute, Hamburg, Germany;
Sandra Steingraber, author;
Diane Takvorian, Environmental Health Coalition;
Joel Tickner, University of Mass., Lowell;
Konrad von Moltke, Dartmouth College;
Bo Wahlstrom, KEMI (National Chemical Inspectorate), Sweden;
Jackie Warledo, Indigenous Environmental Network.

PCB Congress

On March 26, 2003 the first national PCB Congress was convened. It was the first time 36 groups representing PCB impacted communities from across the nation gathered together to discuss similar site concerns, document health issues and remediation successes and failures. At this event, the Declaration of Independence from PCBs was signed by a majority of those attending. It consolidates and fully expresses our overall hopes and expectations surrounding this cleanup and is critical to more fully understand and support our rationale and criticisms of the proposed risk assessment for The Housatonic River. We include this document for the record.

Submitted July 29,2003
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1) http://www.fema.gov/nfip/sign1000.shtm

FEMA-Significant Flood Events 1978-Present

2 http://water.usgs.gov/pubs/FS/fs-014-01/
The National Flood-Frequency Program—Methods for Estimating Flood Magnitude and Frequency in Connecticut, 2001

3)http://ahps.erh.noaa.gov/cgi-bin/ahps.cgi?aly&stvc3#Historical Top Five Historical Crests

4) HRI COMMENTS: ATSDR PUBLIC HEALTH ASSESSMENTS
EPA FACILITY ID: MAD002084093

5) 8)Article From Hartford Courant 1993

6)Jacobson, J.L. and S.W. Jacobson. 1996. Intellectual impairment in children exposed to polychlorinated biphenyls in utero. *N Engl J Med* 335:783-789. (99-1245)

7)Effects of environmental exposure to polychlorinated biphenyls and dioxins on cognitive abilities in Dutch children at 42 months of age. *J Pediat*r, 134:33-41. (99-1253)

8)Schantz, S.L. and J.J. Widholm. 2001. Effects of PCB Exposure on Neurobehavioral Function in Animal Models. In: *PCBs: Recent Advances in Environmental Toxicology and Health Effect*s.

9)Schantz, S.L., D.M. Gasior, E. Polverejan, R.J. McCaffrey, A.M. Sweeney, H.E. Humphrey, and J.C. Gardiner. 2001. Impairments of memory and learning in older adults exposed to polychlorinated biphenyls via consumption of Great Lakes Fish. *Environ Health Perspect109(6)*

10)Schantz, S.L., J.J. Widholm, and D.C. Rice. 2003. Effects of PCB Exposure on Neuropsychological Function in Children. *Environmental Health Perspective*s, 111 (3): 357-376 (99-1255)

11)Rice, D.C. 2001. Relationship between measures of exposure to PCBs/Dioxins and behavioral effects in recent developmental studies. *Human Ecol Risk Asses*s. 7(5): 1059-1077. (99-1137)